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19319A MLRS MISSILE NUMBER BN-175 BN-141 BN-172 ROUND  
NUMBER V-324/PQ-64. (U) ARMY ELECTRONICS RESEARCH AND  
DEVELOPMENT COMMAND WSMR NM ATM. D C KELLER SEP 82  
ERADCOM/ASL-DR-1260

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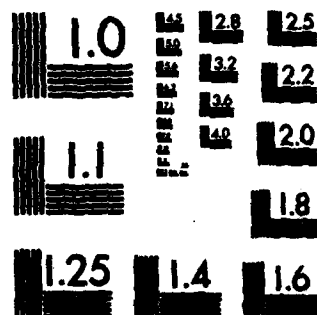
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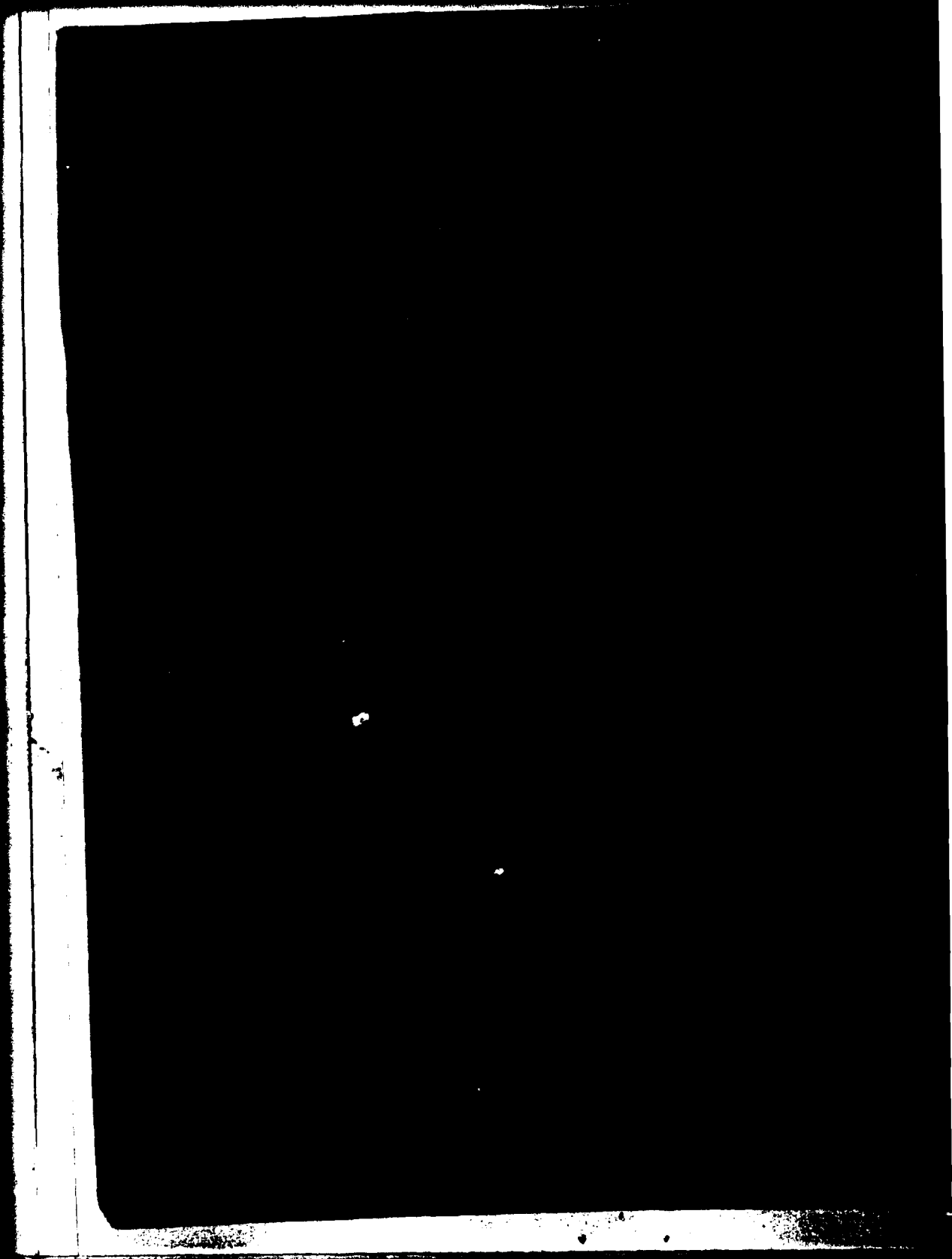
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DR 1260	2. GOVT ACCESSION NO. A121249	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 19319A MLRS Missile Number BN-175, BN-141, BN-172 Round Number V-324/PQ, V-325/PQ-65, V-326/PQ-66		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s)  White Sands Meteorological Team		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS		8. CONTRACT OR GRANT NUMBER(s)  DA Task 1F665702D127-02
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Electronics Research & Development Cmd Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico 88002		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) US Army Electronics Research and Development Cmd Adelphi, MD 20783		12. REPORT DATE September 1982
		13. NUMBER OF PAGES 27
		15. SECURITY CLASS. (of this report)  UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
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18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
Meteorological data gathered for the launching of the 19319A MLRS, Missile Number BN-175, BN-141, BN-172, Round Number V-324/PQ-64, V-325/PQ-65 V-326/PQ-66 are presented in tabular form.		

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# CONTENTS

PAGE

INTRODUCTION-----	1
DISCUSSION-----	1
GENERAL AREA MAP-----	2
LAUNCH AREA DIAGRAM-----	3
TABLES:	
1. Surface Observations taken at 1500 MDT at LC-33-----	4
2. Anemometer-Measured Wind Speed and Direction, LC-33 Fixed Pole, taken at 1508 MDT-----	5
3. Anemometer-Measured Wind Speed and Direction, Tower Levels 1, 2, 3, and 4, taken at 1508 MDT-----	5
4. Launch and Impact Pilot-Balloon Measured Wind Data-----	6
5. Aiming and T-Time Computer Met Messages-----	7
6. LC-37 Significant Level Data at 1200 MDT-----	8
7. LC-37 Upper Air Data at 1200 MDT-----	9
8. LC-37 Mandatory Levels at 1200 MDT-----	11
9. WSD Significant Level Data at 1300 MDT-----	12
10. WSD Upper Air Data at 1300 MDT-----	13
11. WSD Mandatory Levels at 1300 MDT-----	15
12. LC-37 Significant Level Data at 1400 MDT-----	16
13. LC-37 Upper Air Data at 1400 MDT-----	17
14. LC-37 Mandatory Levels at 1400 MDT-----	19
15. WSD Significant Level at 1505 MDT-----	20
16. WSD Upper Air Data at 1505 MDT-----	21
17. WSD Mandatory Levels at 1505 MDT-----	23



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## INTRODUCTION

19310A MLRS, Missile Numbers BN-141, BN-175 and BN-172, Round Numbers V-324/PQ-64, V-325/PQ-65 and V-326/PQ-66, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1508:21, 1508:26 and 1508:33 MDT, 24 Sep 1982. The scheduled launch times were 1500, 1500:045 and 1500:09MDT.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometer at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from Pilot-balloon observations at:

### SITE AND ALTITUDE

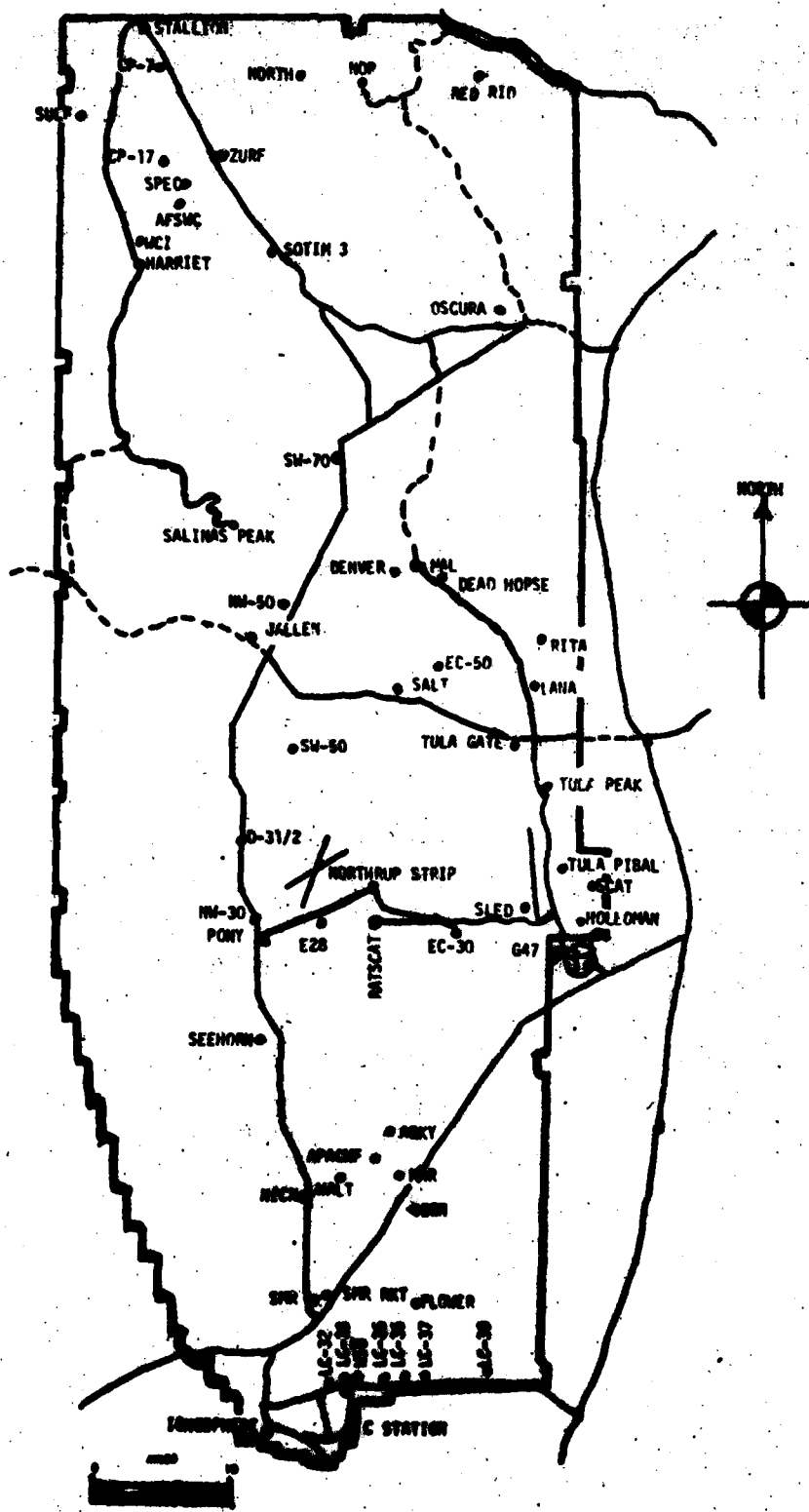
WSD 2KM  
DON 2KM

(2) Air structure data (rawinsonde) were collected at the following Met Sites.

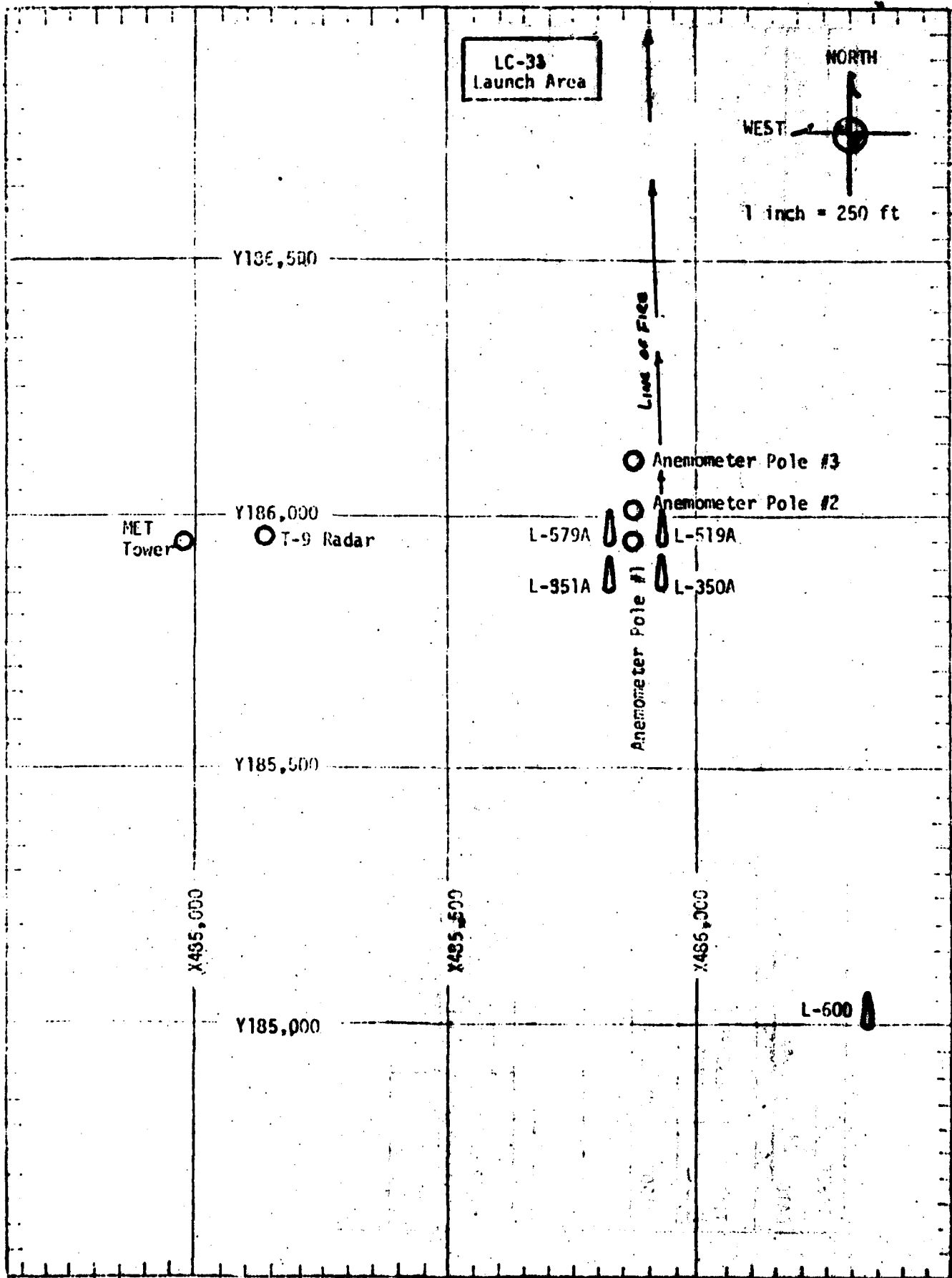
### SITE AND TIME

LC-37 1200 MDT  
WSD 1300 MDT  
LC-37 1400 MDT  
WSD 1505 MDT

# WSMR METEOROLOGICAL SITES







# PROJECT SURFACE OBSERVATION

STATION LC-33 E & A									
TABLE 1		DATE 24 Sep 82		X= 484,982.64		Y= 185,957.73		H= 3995.00	
TIME H - -		PRESSURE mbs		TEMPERATURE OF °C		DEW POINT OF °C		RELATIVE HUMIDITY %	
1508		881.6		30.2		9.9		28	

		WIND		DENSITY gm/m <sup>3</sup>		DIRECTION degs In		SPEED kts		CHARACTER kts		VISIBILITY	
				1011		005		09				50 mi	

OBSTRUCTIONS TO VISIBILITY		CLOUDS						REMARKS	
		1st LAYER		2nd LAYER		3rd LAYER			
		AMT TYPE HGT		AMT TYPE HGT		AMT TYPE HGT			
		1 CU 6,500		8 C1 25,000				H ALDS	

## PSYCHROMETRIC COMPUTATION

TIME:	1508	
DRY BULB TEMP.	30.2	
WET BULB TEMP.	17.2	
WET BULB DEPR.	13.0	
DEW POINT	9.9	
RELATIVE HUMID.	28	

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.29 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
T-30	015	13	T-30	013	10	T-30	014	15
T-20	015	11	T-20	010	12	T-20	015	16
T-10	015	13	T-10	003	09	T-10	024	16
T 0.0	010	10	T 0.0	013	07	T 0.0	021	15
T +10	010	09	T+10	002	10	T+10	009	15

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
T-30	024	07	T-30	021	10
T-20	042	10	T-20	020	12
T-10	030	10	T-10	012	10
T 0.0	006	09	T 0.0	014	12
T +10	007	10	T+10	014	12

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KNOTS	T-TIME SEC	DIR DEG	SPEED KNOTS
T-30	020	12	T-30	012	13
T-20	013	12	T-20	012	14
T-10	004	11	T-10	013	13
T 0.0	007	13	T 0.0	013	13
T +10	006	13	T+10	009	13

TABLE 4

## T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 24 Sep 1982

SITE: WSD  
 TIME: 1508 MDT  
 WSTM COORDINATES:  
 X= 488,852.29  
 Y= 184,982.45  
 H= 3,993.75

SITE: DON  
 TIME: 1508 MDT  
 WSTM COORDINATES:  
 X= 511,988.37  
 Y= 247,396.36  
 H= 3,996.83

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE		
150	030	14
210	015	14
270	023	14
330	028	12
390	022	13
500	031	11
650	026	10
800	019	07
950	312	06
1150	298	08
1350	300	08
1550	302	08
1750	289	07
2000	Balloon Burst	

Data obtained from  
 Single-Theodolite Tracked  
 Pilot-balloon observations.

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE		
150	350	04
210	337	08
270	337	09
330	339	09
390	341	10
500	343	11
650	346	12
800	348	12
950	348	12
1150	341	11
1350	321	10
1550	302	09
1750	286	10
2000	290	11

Data obtained from  
 Single-Theodolite Tracked  
 Pilot-balloon observations.

TABLE 5

AIMING AND T-TIME COMPUTER MET MESSAGES  
24 SEPTEMBER 1982

LC-37 1200 MDT	WSD 1300 MDT	LC-37 1400 MDT	WSD 1505 MDT
METCM1324063	METCM1324064	METCM1324063	METCM1324064
241800124881	241900122884	24200124880	242110122882
00587004 30060881	00027014 30450884	00560005 30450880	00052010 30700882
01002010 30000871	01042012 30230874	01587010 30230870	01039013 30380872
02637016 29820847	02038010 29890849	02046009 30010846	02025015 30020848
03011007 29590809	03041004 29650811	03022005 29750808	03037007 29700810
04538008 29300763	04529008 29320766	04546008 293 0763	04557007 29380765
05562005 28920720	05516008 28920722	05532008 28930720	05537008 28930765
06544002 28480678	06443002 28460680	06500003 28480678	06538005 28470680
07243003 28030639	07309003 27980641	07388003 27970638	07501005 28020640
08627003 27680601	08631005 27720603	08605004 27660601	08574009 27680602
09638009 27470565	09631009 27460566	09609011 27460565	09615011 27410566
10590008 27250531	10595009 27200532	10592010 27180530	10579011 27120532
11565006 26910498	11560007 26870500	11548009 26870498	11512010 26860499
12589013 16360453	12611015 26320454	12575014 26300452	12594017 26360453

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

SIGNIFICANT LEVEL DATA  
2670180097  
LC-37

TABLE 6

STATION ALTITUDE 4651.37 FEET MSL  
24 SEP. 82 1200 HRS MDT  
ASCENSION NO. 97

PRESSURE GFOOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE		REL. HUM. PERCENT
	AIR DEGREES	DEWPOINT CENTIGRADE	
881.3	25.7	11.5	41.0
862.3	24.7	9.4	38.0
850.0	24.2	6.5	32.0
823.9	21.7	5.0	35.0
811.3	21.9	5.8	35.0
737.9	16.8	2.0	39.0
700.0	13.1	-3.2	32.0
652.0	8.0	-4.8	40.0
612.9	3.4	-5.0	34.0
607.4	3.1	-10.8	35.0
588.8	3.1	-18.2	19.0
570.8	1.3	-19.7	19.0
561.9	1.3	-20.4	18.0
527.4	-1.0	-23.6	16.0
500.0	-3.9	-26.0	16.0
455.0	-10.0	-31.6	15.0
425.8	-11.8	-32.5	16.0
400.0	-15.8	-34.6	18.0

STATION ALTITUDE 4051.77 FEET MSL  
24 SEP. 82 1200 HRS MDT  
ASCENSION NO. 97

UPPER AIR DATA

2070160097  
LC-37

TABLE 7

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT DEGREES	REL HUM. PERCENT	DENSITY GM/CM <sup>3</sup> METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
4051.4	881.3	25.7	11.5	41.0	1021.3	675.4	330.0	4.1	1.000285
4500.0	867.7	25.0	10.0	38.9	1008.5	674.5			1.000277
5000.0	852.8	24.3	7.2	33.4	994.2	673.4			1.000265
5500.0	838.0	23.1	6.1	33.4	981.4	671.9			1.000259
6000.0	823.5	21.7	5.6	35.0	968.9	670.4			1.000248
6500.0	809.1	21.8	5.7	35.1	951.7	670.5			1.000252
7000.0	795.0	20.8	5.1	35.9	938.1	669.3			1.000248
7500.0	781.0	19.9	4.6	36.6	924.8	668.2			1.000244
8000.0	767.3	18.9	4.0	37.4	911.6	667.1	312.3	7.1	1.000239
8500.0	753.9	18.0	3.5	38.1	898.6	666.0	306.2	7.6	1.000235
9000.0	740.6	17.0	2.9	38.8	885.8	664.9	306.9	6.9	1.000231
9500.0	727.5	15.8	1.2	37.1	874.0	663.4	311.5	5.7	1.000225
10000.0	714.5	14.5	-0.8	34.7	862.6	661.8	313.6	4.6	1.000219
10500.0	701.8	13.3	-2.9	32.3	851.3	660.2	315.3	3.5	1.000212
11000.0	689.1	12.0	-3.5	33.8	839.8	658.7	313.5	2.2	1.000209
11500.0	676.6	10.7	-3.8	35.8	828.4	657.2	306.1	.9	1.000206
12000.0	664.4	9.4	-4.3	37.9	817.2	655.6	110.6	1.0	1.000203
12500.0	652.4	8.0	-4.7	39.9	806.2	654.1	121.5	2.5	1.000200
13000.0	640.4	6.7	-4.7	44.1	795.2	652.5	128.7	2.8	1.000198
13500.0	628.6	5.3	-4.7	48.3	784.4	650.9	125.0	2.1	1.000196
14000.0	617.0	3.9	-4.9	52.5	773.8	649.3	49.5	.8	1.000193
14500.0	605.6	3.1	-11.4	33.5	762.5	648.0	357.3	3.1	1.000183
15000.0	594.3	3.1	-15.6	23.8	748.6	647.9	353.4	6.2	1.000176
15500.0	583.3	2.6	-18.7	19.0	736.3	647.2	352.0	7.9	1.000171
16000.0	572.4	1.5	-19.6	19.0	725.5	645.9	352.1	9.2	1.000168
16500.0	561.7	1.3	-20.4	18.0	712.4	645.6	349.4	9.4	1.000165
17000.0	551.1	.6	-21.3	17.4	700.8	644.8	346.1	9.4	1.000162
17500.0	540.7	-1.1	-22.3	16.8	689.4	644.0	339.4	8.9	1.000159
18000.0	530.6	-1.8	-23.3	16.2	678.2	643.2	331.4	8.4	1.000156
18500.0	520.5	-1.7	-24.2	16.0	667.6	642.0	325.3	7.3	1.000153
19000.0	510.6	-2.8	-25.0	16.0	657.5	640.8	319.1	6.5	1.000151
19500.0	500.9	-3.8	-25.9	16.0	647.5	639.6	317.8	6.5	1.000148
20000.0	491.3	-5.0	-27.0	15.8	636.0	638.1	316.2	6.7	1.000146
20500.0	481.8	-6.3	-28.2	15.6	625.7	636.5	314.6	7.2	1.000143
21000.0	472.5	-7.6	-29.4	15.4	619.5	635.0	317.7	8.4	1.000141
21500.0	463.4	-8.8	-30.5	15.2	610.5	633.5	321.5	9.9	1.000139
22000.0	454.4	-10.0	-31.7	15.0	601.5	632.0	331.4	12.5	1.000136
22500.0	445.5	-10.6	-31.9	15.3	590.9	631.4	337.5	15.3	1.000134
23000.0	436.8	-11.1	-32.1	15.6	580.5	630.8	336.6	17.4	1.000132
23500.0	428.3	-11.6	-32.4	15.9	570.3	630.1	335.1	19.2	1.000129

XX WIND DATA INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

UPPER AIR DATA  
2670180097  
LC-37  
TABLE 7 Cont'd

STATION ALTITUDE 4051.37 FEET MSL  
24 SEP. 82 1200 HRS MDT  
ASCENSION NO. 97

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (DEGREES (T))	SPEED KNOTS	INDEX OF REFRACTION
24000.0	419.8	-12.7	16.5	561.3	620.8	351.0	20.4	1.000127
24500.0	411.5	-14.0	17.1	553.0	627.3			1.000125
25000.0	403.4	-15.3	17.7	544.7	625.7			1.000123



STATION ALTITUDE 4051.37 FEET MSL  
24 SEP. 82 1200 HRS MDT  
ASCENSION NO. 97

MANDATORY LEVELS  
2470180097  
LC-37  
TABLE 8

GEODETTIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5090.	24.2	6.5	32.	9999.0	9999.0XX
800.0	6819.	21.1	5.3	36.	9999.0	9999.0XX
750.0	8640.	17.7	3.3	36.	304.0	7.8
700.0	10561.	13.1	-3.2	32.	315.5	3.4
650.0	12585.	7.8	-4.7	41.	122.8	2.6
600.0	14729.	3.1	-13.3	29.	354.8	4.6
550.0	17032.	.5	-21.4	17.	345.8	9.4
500.0	19521.	-3.9	-26.0	16.	317.7	6.5
450.0	22215.	-10.3	-31.8	15.	335.0	13.8
400.0	25166.	-15.8	-34.6	18.		

XX WIND DATA INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE 3989.00 FEET MSL  
24 SEP. 82  
ASCENSION NO. 485

SIGNIFICANT LEVEL DATA

2670020485  
WHITE SANDS

TABLE 9

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE GEOMETRIC MILLIBARS MSL FEET	TEMPERATURE AIR DEGREES DEWPOINT CENTIGRADE	REL. HUM. PERCENT
803.6	29.5	36.0
468.2	26.3	37.0
850.0	24.1	41.0
827.6	22.3	40.0
807.8	22.3	33.0
760.0	19.1	40.0
731.2	16.0	44.0
700.0	12.6	39.0
676.5	10.4	34.0
630.8	4.6	49.0
624.9	4.2	41.0
599.9	3.9	18.0
550.9	.6	18.0
520.9	-1.5	16.0
500.0	-4.5	16.0
486.9	-10.0	16.0
423.5	-13.1	16.0
400.0	-16.6	18.0

STATION ALTITUDE 3989.00 FEET MSL  
24 SEP. 82 1300 HRS MDT  
ASCENSION NO. 485

UPPER AIR DATA  
2670020485  
WHITE SANDS  
TABLE 10

GEODETIC COORDINATES  
32-40043 LAT DEG  
106-37033 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY G/CM <sup>3</sup>	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (DEGREES(TN))	SPEED KNOTS	INDEX OF REFRACTION
3989.0	883.6	29.5	36.0	1010.6	679.9	15.0	14.0	1.000287
4000.0	883.3	29.4	36.0	1010.5	679.8	15.0	13.9	1.000287
4500.0	868.2	26.3	37.0	1004.5	676.0	15.0	11.8	1.000277
5000.0	853.3	24.5	40.3	993.2	674.0	16.4	9.6	1.000274
5500.0	836.6	23.2	40.5	980.7	672.4	17.7	7.4	1.000268
6000.0	824.1	22.3	38.8	967.0	671.2	20.2	5.2	1.000261
6500.0	809.8	22.3	33.7	950.7	671.1	16.6	4.1	1.000251
7000.0	795.6	21.3	35.2	937.5	669.9	7	3.3	1.000248
7500.0	781.7	20.2	37.7	924.5	668.7	316.9	4.7	1.000245
8000.0	768.1	19.0	40.1	911.8	667.4	303.2	7.1	1.000242
8500.0	754.5	17.9	41.5	899.2	666.1	298.6	9.4	1.000239
9000.0	741.2	16.8	42.4	886.7	664.8	294.5	9.4	1.000235
9500.0	728.1	15.7	43.5	874.7	663.4	290.2	8.2	1.000230
10000.0	715.1	14.3	41.5	863.7	661.8	285.7	6.4	1.000223
10500.0	702.4	12.9	39.4	852.8	659.9	281.8	4.1	1.000217
11000.0	689.7	11.6	36.8	841.3	658.4	267.0	2.7	1.000211
11500.0	677.3	10.5	34.2	829.9	656.9	256.8	2.1	1.000205
12000.0	664.9	9.0	37.7	819.0	655.2	242.2	2.2	1.000203
12500.0	652.7	7.4	41.7	808.4	653.4	195.6	2.5	1.000201
13000.0	640.8	5.9	45.6	798.0	651.8	185.6	2.6	1.000198
13500.0	629.1	4.5	46.6	787.5	649.9	205.4	1.4	1.000195
14000.0	617.4	4.1	38.2	774.4	649.3	298.8	1.3	1.000186
14500.0	606.0	4.0	23.7	760.8	648.9	351.8	4.0	1.000179
15000.0	594.7	3.5	18.0	748.2	648.2	359.6	6.7	1.000174
15500.0	583.6	2.6	18.0	736.7	647.2	2.6	8.4	1.000171
16000.0	572.7	1.7	18.0	725.3	646.1	354.0	9.1	1.000168
16500.0	562.0	.8	18.0	714.2	645.0	352.1	9.3	1.000165
17000.0	551.4	.0	17.5	702.7	644.1	346.4	9.4	1.000162
17500.0	541.1	-.7	16.0	691.2	643.3	342.1	9.5	1.000159
18000.0	530.9	-1.4	16.1	680.0	642.5	338.4	8.7	1.000156
18500.0	520.8	-2.3	16.4	669.5	641.3	329.4	7.9	1.000153
19000.0	510.9	-3.4	16.0	659.3	640.1	321.4	7.3	1.000151
19500.0	501.2	-4.4	16.0	649.2	638.9	313.7	6.9	1.000148
20000.0	491.5	-5.5	16.0	639.5	637.5	313.7	7.4	1.000146
20500.0	482.8	-6.7	16.0	630.0	636.0	315.5	8.1	1.000143
21000.0	474.7	-7.4	16.0	620.0	634.6	321.8	10.0	1.000141
21500.0	465.6	-9.1	16.0	611.4	633.2	330.1	12.2	1.000139
22000.0	454.6	-10.2	16.0	602.0	631.8	340.1	15.4	1.000137
22500.0	445.6	-11.0	16.0	592.0	630.9	346.5	19.0	1.000134
23000.0	436.9	-11.8	16.0	582.2	629.9	348.5	20.9	1.000132

STATION ALTITUDE 3989.00 FEET MSL  
24 SEP. 82  
ASCENSION NO. 485

UPPER AIR DATA  
2670020485  
WHITE SANDS  
TABLE 10 Cont'd

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CURIC METER	SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	420.3	-12.6	16.0	572.6	624.9	350.1	22.8	1.000130
24000.0	419.9	-13.6	16.3	563.4	627.7			1.000127
24500.0	411.5	-14.9	17.0	554.8	620.2			1.000125
25000.0	403.3	-16.1	17.7	546.4	624.7			1.000123

STATION ALTITUDE 3409.00 FEET MSL  
24 SEP. 82  
ASCENSION NO. 485

MANDATORY LEVELS  
26700.20485  
WHITE SANDS  
TABLE 11

GEODETIC COORDINATES  
32.40083 LAT DEG  
106.37033 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5109.	24.1	10.0	41.	16.7	9.1
800.0	6840.	21.7	5.3	34.	12.7	3.4
750.0	8664.	17.6	4.5	42.	297.2	9.4
700.0	10583.	12.6	-1.0	39.	280.6	3.7
650.0	12605.	7.1	-4.8	43.	193.3	2.5
600.0	14747.	3.0	-18.2	18.	357.3	5.7
550.0	17048.	-1.1	-21.9	17.	346.3	9.4
500.0	19532.	-4.5	-26.5	16.	312.8	6.9
450.0	22221.	-10.6	-31.5	16.	343.6	17.1
400.0	25163.	-16.6	-35.3	18.		

STATION ALTITUDE 4051.37 FEET MSL  
24 SEP. 82 1400 HRS PDT  
ASCENSION NO. 98

SIGNIFICANT LEVEL DATA  
2670180093  
LC-37  
TABLE 12

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE		REL. HUM. PERCENT
	AIR DEGREES	DEWPOINT CENTIGRADE	
880.3	29.5	12.4	35.0
866.0	26.8	8.7	32.0
850.8	25.8	8.8	34.0
826.6	23.8	9.0	39.0
806.3	23.1	6.8	35.0
766.8	19.6	7.4	45.0
710.1	14.2	-1.0	35.0
700.0	13.5	-1.3	36.0
642.8	6.3	-5.3	43.0
629.8	4.8	-5.0	49.0
613.1	3.1	-13.6	28.0
588.1	3.1	-18.2	19.0
533.2	-1.3	-23.2	17.0
517.9	-2.5	-24.1	17.0
510.4	-3.5	-25.6	16.0
500.0	-4.2	-26.2	16.0
453.4	-10.6	-30.8	17.0
426.3	-12.8	-28.3	31.0
400.0	-16.3	-29.1	32.0

STATION ALTITUDE 4051.37 FEET MSL  
24 SEP 82  
ASCENSION NO. 98 1400 HRS MDT

UPPER AIR DATA  
2670180090  
LC-37

GEODETIC COORDINATES  
32.49175 LAT DEG  
106.31232 LONG DEG

TABLE 13

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	WIND DIRECTION (DEGREES TRUE)	WIND SPEED KNOTS	DENSITY GM/CM <sup>3</sup>	SPEED OF SOUND KNOTS	INDEX OF REFRACTION
4051.4	800.3	29.5	315.0	679.9	1007.0	679.9	1.000204
4500.0	866.8	26.7	321.0	676.3	1002.0	676.3	1.000271
5000.0	832.0	25.9	328.3	675.4	987.5	675.4	1.000268
5500.0	837.4	24.7	336.0	674.1	974.2	674.1	1.000266
6000.0	822.9	23.7	343.9	672.9	960.8	672.9	1.000262
6500.0	808.7	23.2	351.7	672.2	946.2	672.2	1.000254
7000.0	794.6	22.1	348.1	671.8	933.1	671.8	1.000252
7500.0	780.8	20.9	327.3	669.7	920.0	669.7	1.000250
8000.0	767.2	19.6	313.0	668.3	906.2	668.3	1.000248
8500.0	753.7	18.4	308.0	666.7	896.5	666.7	1.000240
9000.0	740.3	17.1	307.0	665.1	884.9	665.1	1.000233
9500.0	727.2	15.9	306.0	663.5	873.4	663.5	1.000226
10000.0	714.4	14.6	303.1	661.9	862.1	661.9	1.000219
10500.0	701.7	13.6	297.2	660.7	849.8	660.7	1.000215
11000.0	689.0	12.2	287.1	659.0	838.8	659.0	1.000212
11500.0	676.5	10.6	263.2	657.2	826.2	657.2	1.000208
12000.0	664.2	9.1	253.9	655.3	817.7	655.3	1.000204
12500.0	652.1	7.5	221.5	653.5	807.4	653.5	1.000201
13000.0	640.3	6.0	240.2	651.7	797.1	651.7	1.000198
13500.0	628.5	4.7	309.0	650.1	786.2	650.1	1.000195
14000.0	616.8	3.5	337.6	648.5	775.6	648.5	1.000185
14500.0	605.4	3.1	344.3	647.9	762.5	647.9	1.000179
15000.0	594.1	3.1	344.2	647.8	748.4	647.8	1.000175
15500.0	583.0	2.7	344.2	647.3	735.6	647.3	1.000171
16000.0	572.1	1.9	344.2	646.3	724.1	646.3	1.000168
16500.0	561.4	1.0	344.2	645.3	712.7	645.3	1.000165
17000.0	550.8	.2	340.8	644.3	701.6	644.3	1.000162
17500.0	540.3	-.7	335.3	643.3	690.8	643.3	1.000159
18000.0	530.3	-1.5	329.2	642.3	679.7	642.3	1.000156
18500.0	520.3	-2.3	323.4	641.3	668.8	641.3	1.000153
19000.0	510.4	-3.5	317.1	639.9	659.0	639.9	1.000151
19500.0	500.7	-4.2	310.4	639.1	648.0	639.1	1.000148
20000.0	491.0	-5.4	309.3	637.0	638.5	637.0	1.000146
20500.0	481.5	-6.7	310.1	636.1	629.1	636.1	1.000143
21000.0	472.2	-7.9	311.2	634.0	620.0	634.0	1.000141
21500.0	463.1	-9.2	319.5	633.0	611.0	633.0	1.000139
22000.0	454.1	-10.5	325.3	631.5	602.1	631.5	1.000137
22500.0	445.2	-11.3		630.6	591.9	630.6	1.000135
23000.0	436.5	-12.0		629.8	581.8	629.8	1.000133
23500.0	427.9	-12.7		629.0	571.9	629.0	1.000131

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

UPPER AIR DATA  
2670100090  
LC-37

TABLE 13 Cont'd

STATION ALTITUDE 4051.37 FEET MSL  
24 SEP. 62 1400 HRS MDT  
ASCENSION NO. 96

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	WIND DATA		INDEX OF REFRACTION
				DENSITY GM/CM <sup>3</sup>	SPEED OF SOUND METER	
24000.0	919.4	-13.7	31.3	562.8	627.7	1.000129
24500.0	911.1	-14.8	31.6	554.0	626.4	1.000127
25000.0	902.9	-15.9	31.9	545.3	625.0	1.000125



STATION ALTITUDE 4051.37 FEET MSL  
24 SEP. 62 1400 HRS PDT  
ASCENSION NO. 98

MANDATORY LEVELS  
2670100096  
LC-37  
TABLE 14

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5064.	25.8	8.8	34.	329.3	4.6
800.0	6804.	22.6	7.0	37.	356.3	4.7
750.0	8633.	18.0	5.0	42.	307.8	7.5
700.0	10555.	13.5	-1.3	36.	296.3	5.0
650.0	12579.	7.2	-4.6	42.	223.7	3.2
600.0	14719.	3.1	-15.0	23.	344.3	8.2
550.0	17022.	.1	-21.0	18.	340.5	11.3
500.0	19506.	-4.2	-26.2	16.	310.1	9.1
450.0	22196.	-10.9	-30.1	19.	327.4	15.1
400.0	25139.	-16.3	-29.1	32.		

STATION ALTITUDE 3989.00 FEET MSL  
24 SEP. 62 1505 HRS MDT  
ASCENSION NO. 406

SIGNIFICANT LEVEL DATA  
2670020480  
WHITE SANDS  
TABLE 15

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL. HUM. PERCENT
	AIR	DEWPOINT	
882.5	32.5	8.7	23.0
876.0	29.8	5.1	21.0
858.0	25.8	4.9	26.0
815.2	23.0	4.0	29.0
766.2	19.9	1.8	30.0
700.0	13.2	-8.0	22.0
630.9	5.6	-15.0	21.0
622.5	4.0	-15.1	22.0
549.9	-5	-23.9	15.0
527.1	-2.7	-20.4	14.0
512.2	-3.1	-20.8	14.0
500.0	-4.7	-20.1	14.0
462.4	-8.8	-31.4	14.0
449.0	-9.0	-32.2	14.0
400.0	-17.0	-36.0	16.0

ASCENSION NO. 406  
24 SEP. 62  
1505 HRS MDT

STATION ALTITUDE 3989.00 FFFFT MSL  
24 SEP. 62  
ASCENSION NO. 486

UPPER AIR DATA  
2670020480  
WHITE SANDS  
TABLE 16

GEODETIC COORDINATES  
32.40843 LAT DEG  
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM <sup>3</sup> METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	882.5	32.5	23.0	1001.0	682.7	30.0	9.9	1.000269
4000.0	882.2	32.4	22.9	1001.1	682.6	29.9	9.9	1.000268
4500.0	867.2	28.5	22.7	997.8	677.9	26.9	9.8	1.000259
5000.0	852.4	26.2	25.5	988.2	675.3	23.8	9.8	1.000257
5500.0	837.7	24.8	27.0	975.6	673.8	20.7	9.7	1.000254
6000.0	823.3	23.7	28.3	962.6	672.5	17.6	9.7	1.000250
6500.0	809.0	22.6	29.1	949.3	671.2	9.3	8.1	1.000246
7000.0	794.9	21.7	29.4	935.0	670.2	355.3	6.5	1.000242
7500.0	781.1	20.9	29.7	922.2	669.2	335.5	6.3	1.000238
8000.0	767.5	20.0	30.0	908.9	668.2	317.4	7.0	1.000233
8500.0	753.9	18.7	28.6	897.1	668.6	308.8	7.3	1.000227
9000.0	740.5	17.4	27.0	885.5	664.9	301.0	7.4	1.000221
9500.0	727.4	16.0	25.4	874.1	663.3	301.1	7.4	1.000216
10000.0	714.5	14.7	23.8	862.8	661.7	302.2	7.3	1.000210
10500.0	701.8	13.4	22.2	851.7	660.1	300.5	6.5	1.000206
11000.0	689.1	12.1	21.8	840.3	658.5	296.7	5.5	1.000202
11500.0	676.6	10.7	21.7	829.0	656.9	296.5	4.6	1.000198
12000.0	664.3	9.4	21.5	817.9	655.3	297.6	3.6	1.000194
12500.0	652.2	8.0	21.3	806.9	653.7	294.7	4.6	1.000191
13000.0	640.3	6.7	21.1	796.2	652.1	292.7	5.7	1.000187
13500.0	628.6	5.4	21.3	785.3	650.6	296.7	6.9	1.000184
14000.0	617.0	4.4	21.5	773.5	649.4	299.9	8.1	1.000181
14500.0	605.4	3.6	20.4	761.3	648.4	319.3	8.5	1.000178
15000.0	594.1	2.8	19.4	749.3	647.5	334.5	9.6	1.000174
15500.0	583.0	2.0	18.3	737.6	646.5	340.8	10.6	1.000171
16000.0	572.2	1.2	17.2	726.0	645.5	343.8	11.3	1.000168
16500.0	561.5	.4	16.2	714.6	644.5	341.6	11.0	1.000164
17000.0	551.0	-.4	15.1	703.4	643.6	338.4	10.8	1.000161
17500.0	540.6	-1.4	14.6	692.6	642.4	333.7	10.7	1.000158
18000.0	530.4	-2.4	14.1	682.0	641.2	324.9	10.2	1.000156
18500.0	520.3	-2.9	14.0	670.3	640.6	311.2	9.9	1.000153
19000.0	510.4	-3.3	14.0	658.6	640.1	300.5	9.8	1.000150
19500.0	500.6	-4.6	14.0	649.2	638.5	291.1	10.0	1.000148
20000.0	491.0	-5.7	14.0	639.2	637.3	286.8	10.7	1.000145
20500.0	481.5	-6.7	14.0	629.2	636.1	303.4	11.5	1.000143
21000.0	472.2	-7.7	14.0	619.5	634.9	317.8	12.7	1.000141
21500.0	463.1	-8.7	14.0	609.9	633.6	329.9	14.7	1.000138
22000.0	454.1	-9.4	14.0	599.6	632.8	337.0	16.8	1.000136
22500.0	445.2	-10.3	14.1	589.9	631.7	342.1	19.0	1.000134
23000.0	436.4	-11.6	14.5	581.0	630.2			1.000131

STATION ALTITUDE 3000.00 FEET MSL  
 24 SEP. 82  
 ASCENSION NO. 486

UPPER AIR DATA  
 2670020486  
 WHITE SANDS  
 TABLE 16 Cont'd

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES (TN)	SPEED KNOTS	
23500.0	927.8	-12.8	-34.1	14.0	572.3	624.7			1.000129
24000.0	919.3	-14.1	-34.8	15.2	563.7	627.2			1.000127
24500.0	911.0	-15.3	-35.6	15.5	555.2	629.7			1.000125
25000.0	902.9	-16.5	-36.5	15.9	546.9	624.1			1.000123

STATION ALTITUDE 3989.00 FEET MSL  
24 SEP. 62 1505 HRS MDT  
ASCENSION NO. 486

MANDATORY LEVELS  
2670020480  
WHITE SANDS  
TABLE 17

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE		REL. HUM. PERCENT	WIND DATA		
		AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS	
850.0	5078.	25.8	4.9	26.	23.3	9.8	
800.0	6815.	22.1	3.4	29.	1.1	7.1	
750.0	8641.	18.3	-4	28.	306.7	7.3	
700.0	10562.	13.2	-8.0	22.	300.1	6.4	
650.0	12585.	7.4	-13.0	21.	294.2	4.8	
600.0	14728.	3.2	-17.6	20.	327.7	9.0	
550.0	17026.	-4.5	-23.9	15.	338.0	10.8	
500.0	19505.	-9.7	-28.1	14.	290.7	10.0	
450.0	22197.	-17.0	-32.1	14.	339.4	17.8	
400.0	25139.		-36.8	16.			